

Gendlin, E.T. & J.I. Berlin (1961). Galvanic skin response correlates of different modes of experiencing. *Journal of Clinical Psychology*, 17(1), 73-77.

Galvanic Skin Response Correlates of Different Modes of Experiencing [*]

EUGENE T. GENDLIN AND JEROME I. BERLIN [**]

University of Wisconsin

Introduction

In a recent theory [2, 3], the term "experiencing" is applied to the individual's stream of directly felt data. Personality change during psychotherapy is held to involve many brief periods during which the individual refers his attention directly, and in a continuous way, to these immediately felt data of experiencing. Rogers [5, 6, 7], in his most recent formulations, cites the client's direct reference to experiencing as an index of therapeutic movement.

During the hours of psychotherapy the client's reference to his experiencing is indicated by voice quality, verbal context, and certain characteristic forms of expression. For example, the use of the demonstrative pronoun for feelings ("This feeling", "this all-tied-up way I feel"), and the client's often difficult search for words, may show that he is referring *directly* to felt data the character of which he seeks to convey. Periods of silence are often preceded and followed by words that indicate that the client has been directly and continuously referring to his experiencing during the silence.

The theory considers experiencing to be an aspect of the physiological life of a unitary organism. Therefore, if periods of continuous reference to experiencing are therapeutic, physiological tension-reduction should be measurable during them.

The present study attempts to define and produce "continuous reference to experiencing" in the laboratory, and to contrast its autonomic correlates with those found during other modes of attention. The study thus predicts differences for different *modes of process*, rather than for different verbal or affective *contents*.

Method

The subjects were 17 male and female college undergraduates previously not known to the experimenter. They received credits for participation in the experiment.

The subject was taken into a room controlled for temperature ($73^{\circ} \pm 1^{\circ}$) and humidity ($45\% \pm 5\%$) and seated on the couch. Yellow Springs Zinc Sulfate paste electrodes were then placed on the palmar surface of the left hand. The galvanic skin resistance was measured by the use of a Grass DC1A preamplifier which passed a 50 microampere current through the electrodes. The subject's responses were recorded on the Model 5A Grass polygraph chart driven at a speed of 2.5 millimeters per second.

The experimenter remained seated and silent in the room throughout the experiment. After a five minute accommodation period, seven tape recorded instructions were played. Exactly two and one half minutes separated the conclusion of one instruction and the beginning of the next.

Instructions for continuous reference to experiencing ("a") are contrasted with instructions ("b") during which the individual was either asked to attend *continuously* to an *external* object, or *discontinuously* (self-interruptedly) to a number of different *internal* data. Instructions ("c") asked the subject to speak, speech to an unfamiliar experimenter being held to involve both *discontinuity* and *external*

[*]A preliminary report of this study was presented at the American Psychological Association Convention, 1959. The study was supported in part by grants from the National Institute of Health and the Society for the Investigation of Human Ecology.

[**]The authors are indebted to Mrs. Irene Waskow for her generous assistance in producing this paper.

[Page 74] *attention*. All three types of conditions were duplicated [*] for personally disturbing (" - 1") and undisturbing (" - 2") verbal content. The instructions were:

- c-2 For the first instruction, I'd like to ask you to talk out loud about anything at all. Please talk about various different things, not just one. You might talk about how difficult it is to find something to talk about, or anything at all. All right.
- b-2 All right. For the second instruction, please continue to *think* about the same sort of things you were talking about, only this time don't speak, just think to yourself. Do be sure to think about various things, not just one. All right.
- b-3 All right. Now please concentrate your attention on this table. Try to get all involved in what you see. Pretend that you want to draw the table afterwards and that you want to notice exactly what it looks like. All right.
- a-2 All right. Now, silently to yourself, try to remember as many of your school mates in the early grades of school as you can. Try to remember them, and, if you can, their names. All right.
- b-I All right. Again in this next instruction, please just think silently to yourself. Please, just to yourself, choose some situation or problem about which you have some strong troublesome feelings. When you have decided which problem feelings to choose, please wait until you hear how I'd like you to think about it. All right,
- a-1 O.K. Please think about some one specific aspect of the problem. As you think about it, try to feel it as specifically as you can. If you find yourself thinking about many different things, please again choose one feeling from among these and continue thinking about one feeling as much as possible. All right.
- c-1 All right. Now, in this experiment you are *not* going to be asked to communicate anything personal. But we would like to ask you to speak in some very general way about the problem you have been thinking about. For example, you might say whether it has to do with other people or just with yourself, whether it happens often or rarely or why it is difficult to talk about. All right.

The choice of specific GSR indices was based on the pilot observations which gave rise to the study. GSR was observed during psychotherapy as well as under other circumstances. A strikingly linear increase in resistance was often noted during silences of which the individual later asserted that he was referring to deeply and immediately felt data. Since our theory and the study itself attempt to define this variable, and since no rigorous theoretical basis exists for choosing among the many possible GSR indices, these pilot observations determined the choice. The GSR indices were:

- *Linearity* (the absence of deflections) is defined as an inverse function of the number of deflections (of 1250 ohms or more, each occurring during two seconds or less).
- *Increment* is defined as the increase in resistance between the beginning and the end of each experimental period.

There are thus two separate GSR measures for each comparison of experimental periods. Three hypotheses were formulated as follows:

Hypothesis 1: The "a" as well as the "b" silences will be associated with greater GSR linearity and increment than will periods of speech "c".

Hypothesis 2: Type "a" silences will be associated with greater GSR linearity and increment than will type "b" silences.

Hypothesis 3: There will be no significant difference on the GSR variables between experimental periods numbered "1" and those numbered "2".

Results

For each subject, the means for each type of experimental period were computed and used as raw scores. Tables 1 and 2 show the results of the analyses of variance run in order to test for differences between silences type *a*, type *b*, and speech, on both linearity and increment. F's were significant at better than the .01 level in both analyses. The Duncan Range Test was applied to the results.

[*] Eight experimental conditions are implied. However, there was no practical method of presenting a *continuous external* personally disturbing object, hence "b-3" is not duplicated for that threat. This omission made it impossible to employ a complete factorial design.

[Page 75]

TABLE 1. ANALYSIS OF VARIANCE FOR INCREMENT DIFFERENCES OF TYPE *a* vs. TYPE *b* vs. SPEECH

Source	df	SS	ms	<i>f</i>
Instructions	2	639,290,098.86	319,645,049.43	7.084**
Subjects w/in	16	834,503,302.04	52,156,456.38	1.156
Residual	32	1,443,945,411.14	45,123,294.10	

TOTAL 50 2,917,738,812.04

** .01 level of significance

Type "a" silences were significantly higher than speech "c" on increment and linearity (both .01). Type "b" silences were significantly different from speech only on the linearity variable (.01). Type "b" silences differed significantly from type

TABLE 2. ANALYSIS OF VARIANCE FOR LINEARITY DIFFERENCES OF TYPE *a* vs. Type *b* vs. SPEECH

Source	df	SS	ms	<i>f</i>
Instructions	2	189.61	94.81	12.140**
Subjects w/in	16	1,329.70	83.11	10.641**
Residual	32	250.06	7.81	

Total	50	1,769.37		
-------	----	----------	--	--

Increment Linearity*

"a"	9986.76	5.62
"b"	4778.47	6.94
"c"	1377.35	10.21

The hypotheses were further examined in terms of comparisons between individual experimental periods. Tables 4 and 5 present the results of an analysis of variance between individual periods. F's were at .01 for both GSR variables.

TABLE 4. ANALYSIS OF VARIANCE OF INCREMENT DIFFERENCES BETWEEN INSTRUCTIONS

Source	df	SS	ms	<i>f</i>
Instructions	6	1,619,173,440.34	269,862,240.06	35.88**
Subjects w/in	16	1,798,223,969.75	112,388,998.11	14.94**
Residual	96	722,060,759.66	7,521,466.24	

Total	118	10,638,000,169.75		
-------	-----	-------------------	--	--

**,01 level of significance

TABLE 5. ANALYSIS OF VARIANCE OF LINEARITY DIFFERENCES BETWEEN INSTRUCTIONS

Source	df	SS	ms	<i>f</i>
Instructions	6	451.40	75.23	5.46**
Subjects w/in	16	3,108.89	194.31	14.11**
Residual	96	1,321.46	13.77	

Total	118	4,881.75		
-------	-----	----------	--	--

**,01 level of significance

[Page 76]

Duncan Range Tests concerning individual experimental periods showed that 23 of the 32 differences which would be implied by hypotheses 1 and 2 were found to be significant in the predicted direction. Table 6 shows these results.

TABLE 6. DUNCAN RANGE TEST OF SIGNIFICANCE OF DIFFERENCES BETWEEN INDIVIDUAL INSTRUCTIONS

	A1 > C1	A1 > C2	A2 > C1	A2 > C2		
Linearity	.01	.01	.01	.01		
Increment	.01	.01	.01	.01		
	B1 > C1	B1 > C2	B2 > C1	B2 > C2	B3 > C1	B3 > C2
Linearity			.01	.01	.01	.01
Increment	.01		.01	.05	.01	
	A1 > B1	A2 > B1	A1 > B2	A2 > B2	A1 > B3	A2 > B3
Linearity	.05					
Increment	.01	.01	.01	.01	.01	.01

These findings tend to support the hypotheses that both kinds of silence are different from speech, and that "b" (self-interrupted or externally focused) silences differ from "a" silences (continuous reference, as defined by these instructions). Type "b" silences do not show the extremely high increment found in "a", nor the many deflections found in speech, ("c").

Discussion

The instructions were presented in the same order to all subjects. This was unavoidable, since some instructions depend upon previous ones. (One cannot refer to a single feeling, as in "a-l" without first going through the quite different mode of process involved in choosing one feeling from among many, as in "b-l").

The effect of time alone is ruled out in the findings themselves, since much increment occurred in the second, fourth and sixth periods, while the fifth and seventh showed little. However, the order of speech, threat, and time, in combination, requires that we limit the generalization of these findings to these conditions presented in this order.

Another limitation on the generality of the findings lies in the relationship between theory and laboratory conditions. While the instructions arose from the theory, other instructions are conceivable. Especially "discontinuity" and "external attention" could be called for in many ways other than those used here. Hence predictions for quite different laboratory conditions must be made cautiously, even if they were to seem in accord with the general theory. The study predicted and found differential GSR patterns for just these contrasted laboratory conditions. Even so, the implications are striking:

1. Silence seems to involve significantly more linear increase in resistance, than speech. This difference should be considered in the design and controls used in psychophysiological experiments.
2. Silences during which subjects were instructed to refer directly to *troublesome* personal feelings showed *tension-reduction* patterns. The implication is that—as in psychotherapy—there may be a

mode of psychological process in which troublesome content is referred to in a tension-reductive way. Of course, theoretical interpretations of such a process may differ. Auld [1] reports, "Typically, when a patient is basking in regressive thoughts and appears relaxed, there are no GSRs." Would he consider instructions "a" as engendering a basking in regressive thoughts? Direct reference to experiencing during psychotherapy may similarly be considered "regressive thoughts." Another interpretation might consider continuous reference as a light, self-induced hypnotic trance. Linear resistance increase during such a [Page 77] time would not be surprising. Whatever one's theoretical interpretation, it does appear that linear resistance increase (tension-reduction) accompanies a certain mode of psychological process, even when the contents attended to are troublesome feelings.

Such a conclusion may also clarify previously contradictory findings. Contents (such as "hostility") have been found associated with autonomic tension increase in some studies, while other studies [4] find tension reduction. The present findings imply that predictions of GSR pattern cannot be made on the basis of the threat value of content alone. The *manner* of the psychological *process* must be considered. As defined by laboratory instructions, continuous reference to directly felt experiencing (during silence and in the absence of interruptions) is associated with linear increase in galvanic skin resistance. The findings are consistent with the theory (among others) that the mode of psychological process termed "continuous reference to experiencing" is an organismic tension-reduction process. In other words, immersion in one's ongoing feeling process appears to be organismically adaptive.

Summary

The study attempted to define and produce in the laboratory a phenomenon observed in psychotherapy and theoretically formulated as "continuous reference to experiencing". Organismic tension-reduction was theoretically predicted as a physiological correlate.

Seventeen subjects were given seven tape recorded instructions, each followed by an experimental period of two and one half minutes. Number of GSRs and resistance rise were measured during each period. Following the laboratory instructions for silent continuous reference to experiencing significantly fewer GSRs and greater resistance increase occurred, than during experimental periods that involved speech, or silent external or self-interrupted attention.

References

- [1]AULD, F. JR., DREYER, H. W. and DOLLARD, J. Measurement of electrical skin resistance during interviews. *Psychological Reports*, 1958, 4, 1.
- [2] GENDLIN, E. Experiencing: A variable in the process of therapeutic change. *Amer. J. Psychotherapy*. In press.
- [3] GENDLIN, E. and ZIMRING, R. The qualities or dimensions of experiencing and their change. *Counseling Center Discussion Papers*, University of Chicago, Counseling Center, 1955, 1, 3.

- [4] LACEY, J. I. Psychophysiological approaches to the evaluation of psychotherapeutic process and outcome. In *Research in Psychotherapy*. Proceedings of a conference, Washington, D. C.: American Psychological Assn., 1959, p. 174.
- [5] ROGERS, C. R. A process conception of psychotherapy. *Amer. Psychologist*, 1958, 13, 4.
- [6] ROGERS, C. R. A tentative scale for the measurement of process in psychotherapy. In *Research in Psychotherapy*. Proceedings of a conference, Washington, D. C.: American Psychological Assn., 1959.
- [7] WALKER, A. M., RABLEN, R. A. and ROGERS, C. R. Development of a scale to measure process changes in psychotherapy. *J. clin. Psychol.*, 1960, 16, 1.